

Appl. No.: 10/718,230

Amdt. Dated February 1, 2006

Response to Office Action Mailed December 2, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (Currently Amended) An automatic tracking apparatus for a reflector comprising:

a surveying machine body;

an illumination portion, which is disposed in said surveying machine body ~~for illuminating, and illuminates~~ a measurement light of a modulated measurement light toward a reflector;

a light receiving portion, which is disposed in said surveying machine body ~~and which~~ has an image sensor for receiving a reflection light image of the measurement light illuminated toward said reflector;

an arithmetic device configured to calculate a position of the reflection light image from said reflector in an area of said image sensor; and

~~a rotation mechanism for rotating, which rotates said surveying machine body so as to such that the position of said reflector the reflection light image on a light receiving optical axis of said light receiving portion based on the position obtained by said arithmetic means device becomes a center of the image sensor,~~

wherein said light receiving portion is provided with a light receiving sensor, which has having a smaller area than the area of said image sensor, and is disposed in a conjugated position

with the image sensor on said a light receiving optical axis of the light receiving portion, so as to receive a quantity of light in a vicinity area including an image center of the image sensor, and also in a conjugated position with said image sensor, and a synchronization detecting circuit, which detects an output of the light receiving sensor in synchronization with the modulated measurement light, and

said arithmetic device distinguishes determines the reflection light image of from the reflector from a light image other than the reflection light image of said reflector based on an output of said light receiving sensor if the synchronization detecting circuit detects that a modulated frequency of the modulated measurement light coincides with a frequency of the output of the light receiving sensor, and rotates the rotation mechanism based on the determination to track the reflector.

2. (Cancelled).

3. (Currently Amended) The automatic tracking apparatus for a reflector according to Claim 1, wherein said image sensor and said light receiving sensor are disposed in the conjugated position through a beam splitter, and said light receiving sensor receives a quantity of light in a vicinity area of the image center of said image sensor.

4. (Previously Presented) The automatic tracking apparatus for a reflector according to Claim 1, wherein said illumination portion emits a modulated pulsed light, which is the measurement light, in an accumulation time during one field of said image sensor, and the arithmetic device detects the position of the modulated pulsed light received by the image sensor, and distinguishes the reflection light image of the reflector from the light image other than the reflection light image of the reflector.

5. (Cancelled).